ECE 3300L.02 Lab 7

Group H
Mohamed Hamida
Sherwin Sathish

Lab Objective

- Create an “Alien” calculator that multiplies, adds, and subtracts 2 1 digit numbers.
- Create it using an ALU (Arithmetic Logic Unit)
- Output result to a 7 segment display

Code Breakdown

- seg7driver.v
  - File to drive the 7 segment display using multiple displays
- alu.v
  - File to calculate addition, subtraction, and multiplication
- bin2bcd.v
  - File to convert binary number to a bcd number easily displayed by the 7 segment display
- top.v
  - File used to bring it all together and link inputs and outputs
- constraints.xdc
  - XDC file used to manage hardware connections to Nexys A7 board

Challenges

- During this lab we came across one major issue. The issue was when we were trying to utilize 2's complement rather than case statement logic for the ALU. We could not figure out how to convert a 4 bit number to a 5 bit number. WIth hindsight I realized that we could probably append the sign bit afterward, but this came after the lab was completed. If we were to redo this lab, we would implement this 2's complement logic.

Contribution

7seg driver - Mohamed Hamida

Bin2bcd - Mohamed Hamida

Top FIle - Mohamed Hamida and Sherwin Sathish

ALU - Mohamed Hamida and Sherwin Sathish

Demonstration Video - Sherwin Sathish

Powerpoint Slides - Mohamed Hamida and Sherwin Sathish

Project compiling and uploading - Mohamed Hamida